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PROJECT NO. 52373

**REVIEW OF WHOLESALE ELECTRIC
MARKET DESIGN**

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**PUBLIC UTILITY COMMISSION
OF
TEXAS**

COMMENTS OF VOLTUS

Voltus, Inc. (“Voltus”) hereby submits these comments to the Public Utility Commission of Texas (“Commission”) regarding its review of the wholesale electric market design. Voltus is a distributed energy resources (“DER”) provider specializing in commercial and industrial wholesale market participation. Voltus operates its DER platform in every North American wholesale market. Voltus has developed specialized technology to use load to provide operating reserves, which enables it to be the only demand response company providing operating reserves in the Southwest Power Pool (“SPP”), the Midcontinent Independent System Operator (“MISO”), and the California Independent System Operator (“CAISO”).

In Texas, Voltus participates in ERCOT’s Emergency Responsive Service (“ERS”), ERCOT’s Four Coincident Peak Program, the Centerpoint Commercial Load Management program, and the Oncor Commercial Load Management program. Voltus will soon enter ERCOT’s Load Resources (“LR”) program.

Executive Summary

Voltus’s position is that Texas can make small changes to cost-effectively secure additional reliability by leveraging distributed energy resources (demand response, energy storage, distributed generation, and energy efficiency) across all customer segments. These changes include:

1. Permitting residential distributed energy resource aggregations;
2. Removing the cap on ERS participation;
3. Paying for energy provided by ERS participants; and
4. Allowing DERs to bid in day-ahead and real-time energy MWh reductions.

Load resources are an affordable source of reliability in a competitive market. Texas is an ideal market to leverage load for reliability, given its robust C&I load and increasing penetration of distributed energy resources. Leveraging these resources at peaks aligns with Texas’s energy only market.

Voltus is a member of both the Texas Advanced Energy Business Alliance (“TAEBA”) and Advanced Energy Management Alliance (“AEMA”) and supports their filings.

Responses to Select Commission Questions

- 1. What specific changes, if any, should be made to the Operating Reserve Demand Curve (ORDC) to drive investment in existing and new dispatchable generation? Please consider ORDC applying only to generators who commit in the day-ahead market (*DAM*) . Should that amount of ORDC - based dispatchability be adjusted to specific seasonal reliability needs?**

While the question specifically asks about changes to the ORDC to drive investment in dispatchable generation, the Commission could consider other constructs as an eventual successor to the ORDC. One potential successor is Stochastic Nodal Adequacy Pricing (“SNAP”). SNAP analyzes the value of adequacy of every resource at every node in the system for every hour of the day, identifying the probability of inadequacy events by analyzing probabilistic weather forecasts. SNAP enables market-driven formation of hourly and locational demand curves that imbed the value of resource adequacy. SNAP rewards all elements of the system for their contribution to system adequacy: distributed energy resources, generating assets, and transmission assets. This construct could ensure reliability by adequately valuing the reliability provided by dispatchable generation while also cost-effectively incorporating intermittent renewable generation and appropriately valuing demand response. More information is attached as Exhibit A.

- 2. Should ERCOT require all generation resources to offer a minimum commitment in the day-ahead market as a precondition for participating in the energy market? a. If so, how should that minimum commitment be determined? b. How should that commitment be enforced?**

No. Such a policy could result in *reduced* resource availability by barring resources that lack day-ahead visibility into their generation availability from participating in the real-time market when their generation is needed.

- 3. What new ancillary service products or reliability services or changes to existing ancillary service products or reliability services should be developed or made to ensure reliability under a variety of extreme conditions? Please articulate specific standards of reliability**

along with any suggested AS products. How should the costs of these new ancillary services be allocated?

A new reserves product could be introduced to address imbalances at specific nodes. MISO is rolling out such a product, known as short-term reserves. Voltus agrees with TAEBA that ancillary service costs should be borne by all market beneficiaries.

4. Is available residential demand response adequately captured by existing retail electric provider (REP) programs? Do opportunities exist for enhanced residential load response?

Price-responsive demand is integral for any functioning market, but price response alone is not sufficient to wholly unlock the potential for distributed resources that can serve the grid; incentives are also necessary. Given the number of distributed energy resources (e.g., batteries, generators) being purchased after Winter Storm Uri as private reliability resources, there must be paths for these resources to sell energy and reserves to the distribution and transmission systems. Incorporating these new resources into the supply side of the wholesale market will reduce system costs for all Texans. Furthermore, energy and reserve revenues help residential, commercial, and industrial energy users to hedge their energy costs. Incorporating competitive aggregators helps maximize the value of distributed resources, as these innovative companies compete to offer the best customer value. Specialized aggregators can help end customers cut through technical and regulatory requirements to maximize their participation in price response, energy markets, and operating reserves.

There should therefore be a mechanism for residential demand response and other distributed energy resource aggregations to participate in the wholesale markets. Voltus would support a framework like that in Senate Bill 1479,¹ which would allow for aggregations of distributed energy resources behind a single electric bus or node to submit market offers. Aggregators can support the bulk transmission system using residential loads in a variety of ways. In many markets, for example, aggregators use residential hot water heaters and batteries to provide ancillary services. Water heaters provide 88% of demand response regulation in PJM.² Furthermore the same resource can offer different services in retail and wholesale programs: aggregated batteries could provide ancillary services in the wholesale market while energy use is valued through a retail program. Ancillary services could be a valuable

¹ An Act Relating to the Participation of Distributed Energy Resources in the ERCOT Market, Tex. S.B. 1479, 87th Leg., R.S. (2021) <https://capitol.texas.gov/BillLookup/Text.aspx?LegSess=87R&Bill=SB1479>.

² PJM, 2021 Demand Response Operations Market Activity Report, at 11 (Aug. 9, 2021) <https://www.pjm.com/-/media/markets-ops/dsr/2021-demand-response-activity-report.ashx>.

complementary revenue stream for individual customers. Even though residential resources represent a small portion of supply in other wholesale markets, the contribution from the residential sector is quickly growing. ERCOT should enable a wholesale market participation model to ensure it quickly incorporates these rapidly developing resources. Best practices established in other wholesale markets can be used to develop a model that properly values these resources for their grid services.

5. How can ERCOT's emergency response service program be modified to provide additional reliability benefits? What changes would need to be made to Commission rules and ERCOT market rules and systems to implement these program changes?

Texas has one of the best competitive energy markets in the world. While the ERS has provided dependable grid reliability for years, it's a first-generation product developed over a decade ago, before the price cap for energy was adopted. The budget cap for ERS limits the number of megawatts ERS can provide, even though the ERS was one of the most reliable resources during Winter Storm Uri. Voltus's ERS portfolio over-performed relative to its commitment. Given that maintaining low energy costs for the C&I sector is a pillar of Texas's booming economy, expanding the ERS aligns with Texas's economic priorities. ERS provides a cost-effective source of reliability whose peak availability aligns with ERCOT's system peaks.

Voltus would propose that ERS not be subject to a budget cap, or have the cap at least doubled, while enabling customers to receive energy payments if they clear in the day-ahead energy market. This would increase the amount of C&I demand and reliability available.

6. How can the current market design be altered (e.g., by implementing new products) to provide tools to improve the ability to manage inertia, voltage support, or frequency?

The Commission could enable dual-enrollment in ERS and LR and prioritize the roll-out of ECRS (ERCOT Contingency Reserve Service), which has been pushed to 2024. ECRS is LR without the under-frequency relay requirement, originally targeted for 2022. This under frequency relay requirement is costly, and therefore excludes a significant number of resources.

Sincerely,



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Exhibit A

RELEVANCE OF STOCHASTIC NODAL ADEQUACY PRICING (SNAP) TO ISO/RTO MARKETS

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Ira Shavel

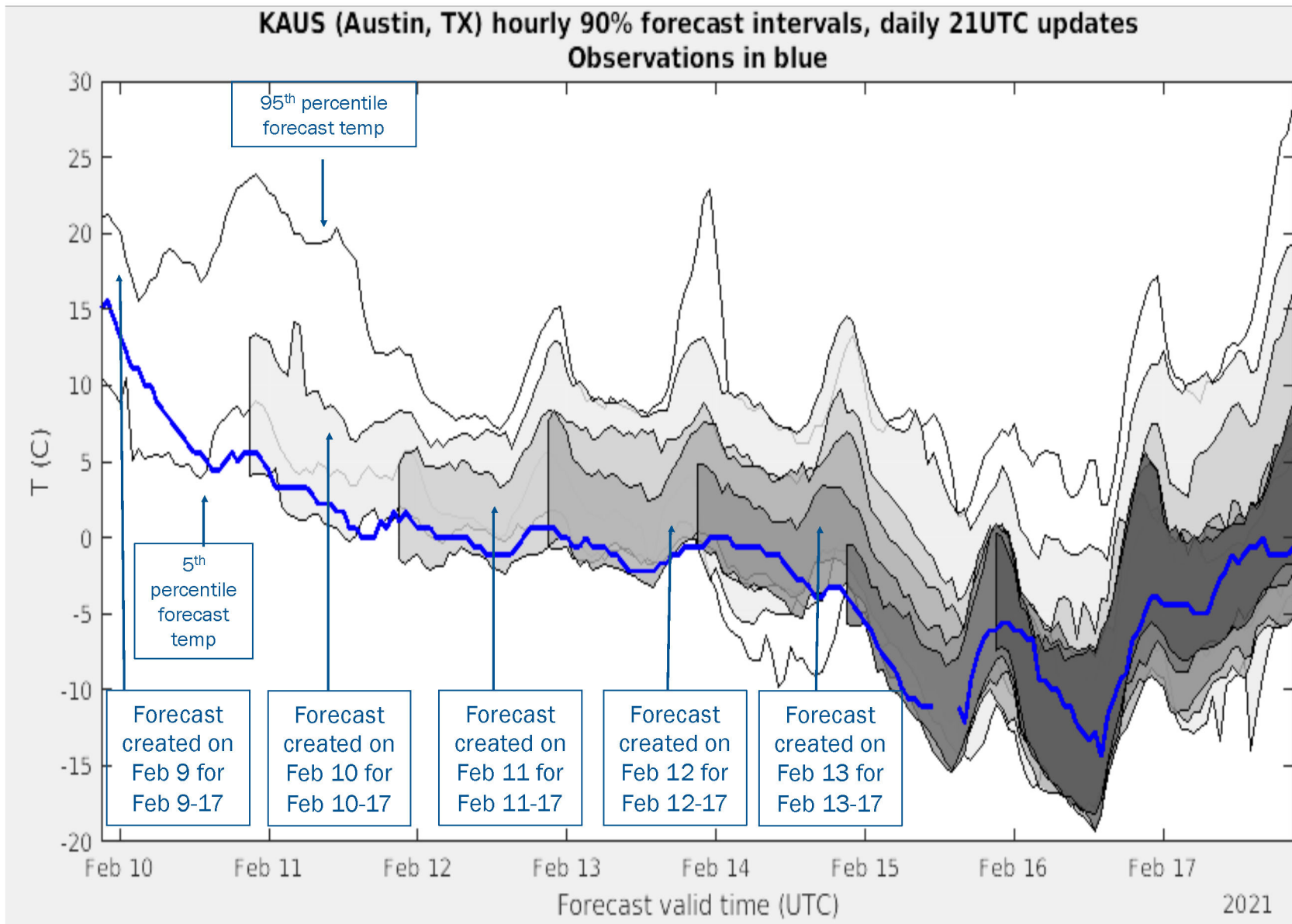


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What is SNAP? Stochastic Nodal Adequacy Pricing platform that:

- Continuously (daily or more frequently) evaluates the expected (probabilistically determined) value of adequacy of every resource at every node in the system for every hour of the day
- Identifies the probability of inadequacy events
- Continuously incorporates the probabilistically calculated value of adequacy into payments to resources providing adequacy
- Provides market participants economic signals, by hour and location, reflecting the resource adequacy of the system
- Funded in part by a DOE ARPA-E Grant

The Stochastics of SNAP are based on probabilistic weather forecasts



Notes:

- Source is IBM's probability weather forecast
- Prediction interval: 90%
- Temps shown in Celsius
- Short duration data gap on Feb 15th likely due to frozen sensor or loss of power
- As early as February 9th, one could see the "signal" for a cold snap beginning on Feb 14th
- Across the forecast runs generated on Feb 9 – 12, the low end of the 90% prediction interval proved to be closer to the actual
- This graphic shows the value of depicting the "worst case" temp forecast when temps are extreme, and the "worst case" can lead to disproportionate spikes in electricity demand

Source: IBM Corporation. Forecasts for each day generated at approximately 9pm UTC (3pm CST)
Forecast valid times shown as UTC (UTC is 6 hrs ahead of Austin/ CST time)



SNAP is based on market economics and engineering

- SNAP pays each resource its probabilistic value/contribution to system adequacy
- SNAP reflects the probabilistic system conditions: state of the demand, grid and resources
- SNAP provides transparency with respect to resource performance characteristics under Extreme Weather conditions
- SNAP provides transparency in creating the market driven formation of hourly and locational demand curves
- SNAP rewards all elements of the system for their contribution to system adequacy
 - *Demands response, DERs and Reliability Interruption Bids (RIBs)*
 - *Generating assets*
 - *Transmission assets*

Why is SNAP potentially valuable in ISO / RTO markets?

- SNAP provides a more economically efficient and politically acceptable solution than an administratively determined capacity market structure or one based on ORDC
- SNAP provides more assurance of revenue adequacy
 - *Reduces uncertainty for market participants*
- Looking at the demand side, SNAP provides incentives for efficient demand participation
 - *Improves incentives for price response based upon actual customer value rather than an administrative value*